

**IN THE ABSTRACT:**

Please add the abstract as follows:

In fusion splicing ends of two optical fibers an electric discharge between two electrodes is used for heating the ends. In a simple method that can be implemented in automatic fusion splicers, an optimal fusion current that is to pass between the electrodes to give an optimal heating for ambient conditions is determined by first, in a calibration procedure in the factory, determining an optimal current for splicing ends of some test optical fibers. Then a value of the intensity of light emitted from the ends of the test optical fibers is determined when they are spliced using the optimal parameters. In the field, in generally ambient conditions different from those in the factory, a value of the current required to heat a piece of the test fibers to emit light of an intensity agreeing with that determined for the test fibers in the factory. A proportional change is calculated by mathematically dividing the value of the current required for heating the test fiber in the field conditions by the optimal current determined in the factory. A value of the fusion current to be used in splicing the fiber to each other is calculated by modifying, by the calculated proportional change, the fusion current that should be used for fibers in the factory ambient conditions. Finally, the fusion current used in the actual splicing of the ends of the two optical fibers to each other is controlled to take the calculated value.